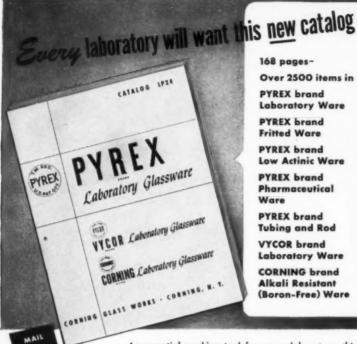
THE hemist

DECEMBER, 1944



VOLUME XXI, No. 9

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Benjamin Franklin

Chemist .

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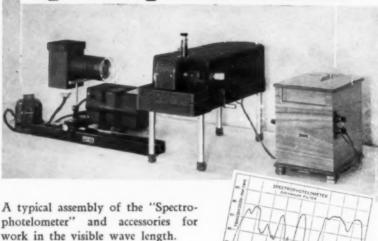
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Justice Thurman Arnold And the Patent System

Reprinted from THE MONTCLAIR (N. J.) TIMES.

(Editor's Note: This in an analysis of a decision and opinion which recently appointed Justice Thurman Arnold has made in a patent case in which he does not discuss the evidence and bases his decision upon conjecture. It promises to be a celebrated case. The author says of it that Edison would not have been able to obtain patents for his marvelous inventions if the rule of law laid down by the Justice had prevailed at that time.

(Author Kirk Brown has had wide experience in matters relating to patents in the rubber and chemical industries. In the writing field he is known for his series of articles published in this paper, on the revision of the State Constitution.)

"JUSTICE THURMAN ARNOLD of the United States Court of Appeals has rendered a decision with an opinion that, unless reversed by the Supreme Court, which is not probable, or made ineffective by new legislation, may close the doors of our great research laboratories, reverse the practice of the patent office deny the protection of the patent laws for innumerable inventions and make impossible the registration of the intellectual property of their inventors.

"It is a good instance of the gradual breaking down of our system of government that goes on in every branch of Washington dominated by the political philosophy of the New Deal. As Justice Wilson has said. 'decisions of courts whetted and guided and impelled by consideration of policy are terrible instruments of arbitrary power.' An application for a patent contains claims minutely describing the invention particularly with respect to what is new. If there are many claims more than one patent may be granted on a single application if the patent office deems that the claims describe more than one invention. To this document the inventor takes oath that he is the inventor.

"Louis M. Potts, in the employ of the Teletype Corporation which later became a subsidiary of the American Telephone and Telegraph Company, made an application for a patent on an electrical communication system and that was the situation in his case so the inventor asked for that additional patent but the patent office said. 'No, that isn't new; it is already described in other patents.' That sort of thing is a very common occurrence in the patent office and usually settled without much trouble, but if an appeal is taken and the trial court upholds the patent office decision and an appeal from that court to Justice Arnold's Court of Appeals is taken, the preceding decision will be again upheld 'unless actually inconsistent with the evidence' and that again, was exactly the situation in this case.

At this point a layman might ask. 'Well, what about that evidence on which this case hinges?' But he could search the printed opinion of the Justice from end to end and find not one word about it, though the Justice says that 'is the only question before us.' He lays the ground for a refusal of a patent for other reasons for which he goes outside the record to find the materials. He charges that the invention was produced by the co-operation of others within the research organization of the American Telephone and Telegraph Co. and that there is an 'absence of evidence of individual achievement' in which he ignores the oath of the inventor that it was his achievement and concludes that that imparts a 'character' to the invention that puts it beyond the pale of the patent laws.

"He assumes that this is the case, presents no facts to bear it out, pres-

ents his own mental process by which he 'reconstructs' the conditions under which the inventor worked and from this picture of his imagination he draws an inference and says that 'that inference supports the finding of the court below that there is no invention in this case.' So here we have a court decision based on an inference deduced from an assumption. That must be a record of some kind.

"To bolster this the Justice cites the accomplishments of the American Telephone and Telegraph Co. in the field of research, referring to its employes as captive inventors, for no apparent reason stressing its expenditures as 'probably more than the total of any university in the United States' and again draws on his imagination to describe its processes from which he deduces his own definition of what are not inventions.

"These dicta are as follows: 'We have held that a step forward which. considered in connection with the highly developed condition of the art, might reasonably be expected from the research of highly trained specialists is not invention. Neither the result of great industry in experimental research nor the successful product of a gradual process of experimentation over a period is invention. Routineering, even by the most highly trained specialists, step by step improvements, the carrying forward of a new and more extended application of the art. are not invention. There is no invention without inventive genius. The objective advance does not identify or evaluate the individual achievement. The character of the article or process, its novelty and its advance over the prior art are merely evidentiary.'

"Who is to be the judge of what 'might reasonably be expected?' After somebody has done it how easy it would be for a judge to say, 'Why, anybody could foresee that result.' Howe put the eye of the needle in the sharp end and made the sewing machine possible. Louis Robert and Fourdrinier put the sieve on rollers and the paper making machine followed. Not inventions by the Arnold test. At Menlo Park his organization under Edison's direction tried 600 experiments to find the right filament for the incandescent light; this according to Arnold was only 'step-by-step' and therefore no invention, and if his organization had been in some one's else pay Edison's work would have acquired a 'character' that made patents forbidden to him. Madam Curie's work in isolating radium was only routine.

"What the Justice calls 'routineering' is a process employed more or less by all inventors but if he thinks the procedure of the great research organizations is routine and nothing else he seems to have so completely failed to understand their management as to disqualify him from passing upon the 'character' of their product. In no other form of human activity is there

such play of individuality; the whole plan of research is built on it. These laboratories put at the service of inventors vast apparatus that they could not otherwise command and without which the individual would be helpless to produce the great inventions of the future, but their doors will be closed if the Arnolds have their way. One wonders what deep study of the origins of inventions can have led to the oracular statement that there can be no invention without inventive genius. Discoveries are patentable as are inventions; do they require inventive genius? One cannot help admiring this masterful generalization of a vast field of millions of particulars with one sweep of the fountain pen.

"Such is this monstrous decision reached by guess-work. He throws into the discard the age-old principles of the patent system and substitutes his own dictum of 'character,' whatever that means. Here are four new principles laid down for the guidance of the patent office in granting or refusing to grant patents. (1) Guessing as a means of determining evidence; (2) the method of producing an invention rather than its novelty to be a determining factor (the National Patent Planning Commission recommends the enactment of a declaration exactly the contrary); (3) the recognition of a sort of self-destructive principle by which an invention becomes no invention and (4) denial of property rights to an inventor because he intends to assign his property to a particular corporation.

"If anyone of the 651,711 stockholders of the American Telephone and Telegraph Company were to invent something so trivial that it would never be put to use-and there are thousands of such inventions-he could obtain a patent without the least objection from the courts, but let them all act jointly and produce an invention that bursts into the silent sea of undiscovered things and opens up a whole new world of intellectual effort; let them produce an invention that is priceless in its benefits to humanity, and they, if Justice Arnold has his way, will be denied the shield of the law in the possession of their property, the invention will be belittled as a mere step-by-step development, it will have acquired a 'character' that will make it an outcast and a learned judge will hide his ignorance behind a conjecture that there was no individual achievement among the 7.000 researchers employed by the 651,711 stockholders,"

The purpose of the patent laws, in the language of the Constitution, is "to promote the progress of science and the useful arts." Nothing is said about rewarding inventors, as the Justice repeatedly asserts, nor are patents in any way rewards. A patent is granted for a consideration, paid by the inventor, and of greater value than the patent itself and that is the full public disclosure of the invention in

order that it may be consecrated to public use when the patent expires in seventeen years. The inventor's knowledge of his invention is his intellectual property and he surrenders this to the government for the security of an exclusive right for a brief term of years. In this transaction the inventor gives more than he receives. What, indeed, was the gain of Edison in the first years of the incandescent light compared with the benefits to the entire world forever after?

Before the patent system was evolved, inventions and discoveries were not disclosed, so much so that trades, industries and occupations were called mysteries. Throughout that whole era the only inventions that became public property were those which it was not possible to hide. All the secret labors of the innumerable Edisons of those dark ages were lost, refound and lost again and again. The "dark ages" and the "lost arts" were not empty phrases; when they became recognized as the fruits of the lack of security for intellectual property there arose the system of granting letters patent.

The very name of this government writ gives point to the nature of this transaction; it is called a patent because it is open for every one to see which is the old meaning of the word. As confidence grew in the system, the number of patents granted gradually increased until at present they are issued from our patent office at the rate of 550 weekly and the total num-

ber to date is 2,357,000 since the present numbering system was installed. The value to humanity of the system is reflected by the number of these patents that have expired which is 1,641,750 and this number is increasing at the weekly rate of over 800.

Similar expirations have occurred and are occurring in all other countries employing the patent system so that all the inventions and discoveries of this vast catalogue have become public property the world over. Among these expired patents that have become the heritage of humanity, are to be found nearly all of the great basic inventions and discoveries of our times but greater than these has been the intellectual creative development of man far surpassing his known accomplishments in the entire previous history of civilization, for that is the ch'ef product of the system, the "progre's of science" in the words of the Constitution, the sum of universal knowledge.

The patent system is the greatest cause of the accumulation of human knowledge of material things; had it been in use sooner civilization would have advanced that much earlier. Human nature did not change. It was straining at its bonds when Archimedes lived, when the builders of the pyramids lived, when the inventor of the wheel came out of his cave.

A research organization sometimes uses its facilities for the discovery or development of a definite invention to

meet a known want but frequently engages in pure science, that is, the discovery of knowledge that may have no immediate application and with no expectation of profit. Much of this work is described in scientific publications as a contribution to the common fund. It was in this manner that the direct application of serums in the spinal sac was recorded twenty-five vears before its first use was made in checking the death rate from infantile paralysis. The anti-typhus insecticide remained unrecognized for seventy years. This is far removed from the picture drawn by the imagination of Justice Arnold from which he deduced his inference.

As the sum of human knowledge increases more and greater inventions will be made. "Discoveries are not terminals, they are fresh starting points from which we can climb to new knowledge" says Dr. Whitney, first director of the General Electric Research Laboratory. The automobile of today is made possible by scores of prior inventions that added up to the modern car, such as the internal combustion motor, the pneumatic tire, the spark plug, the muffler, the electric starter, the differential gear.

In like manner there has occurred an accumulation of knowledge that has broadened the field of invention with each passing day, the gift of the inventors of the world because of the patent system. Who shall say what lies beyond these new horizons. Research is concerned with great things requiring giant tools that need giant hands to use them. Its processes are beyond the possibility of individual effort. Its total peace-time expenditure in the United States is estimated at two hundred millions.

If there shall be established in the law the principle that the discoveries and inventions made by our great research organizations shall not be deemed inventions and not patentable, or that patents granted to the individual employes of these organizations shall not be transferable to the organization then we can expect the end of modern research.

We stand on the threshold of a new world. Armed with the tools of industry and the marshalled knowledge of the ages the genius of the people is knocking at the doors of nature's secrets. What will those doors unfold? We shall never know if the apostles of the dark ages shall prevail. If they shall be permitted to say to industry, "You shall retain no part in the benefits that you confer; you must contribute all you have without hope of sharing in the least."

If they are permitted to ignore the biblical injunction not to muzzle the ox that treadeth out the corn, we can be sure, unchanging human nature being what it is, that at best industry will revert to secrecy or at worst will discontinue its costly research. And the class of intellectuals who do the creative work will suffer a like fate. "Where there is no vision the people perish."







The Board of Higher Education of New York City plans construction of new buildings, two at City College, one at Brooklyn College, and one at Queens College, to cost a total of \$6,543,500. Science buildings will be erected at City College and Queens College.



Sylvia Covet, A.A.I.C., formerly with Universal Oil Products Company, is now with Hydrocarbon Research, Inc., 115 Broadway, New York, N. Y. The University of California is working on specifications and plans for a postwar building program to cost \$27,500,000. Buildings include those for science subjects and laboratories.

Walter J. Baeza, F.A.I.C., president of Industrial Research Company, New York, spoke at the meeting of The Chemistry Teachers' Club, of New York, held at City College, on the evening of November 17th. His subject was, "Progress in Powder Metallurgy."

Post-War II Science Training

Alexander Silverman, F.A.I.C.

Head of the Department of Chemistry, University of Pittsburgh

THE influence of war research on Post-war science training involves many questions. World War II research has numerous angles. Can we anticipate the answers to questions that arise? Disclaiming any influence of World War I, fourteen points are presented. They are:

- How will the various Army and Navy training programs influence post-war science training methods?
- 2. How will the experiments of the United States Office of Education concerning vocational training and the Engineering, Science and Management War Training program be a factor?
- 3. What effect will the training programs which manufacturers have instituted in their own plants have?
- 4. What influence will the Office of Scientific Research and Development with its divisions, the National Defense Research Committee and the Committee on Medical Research bear?

- 5. Will the practical undertaking of the War Production Board and its Office of Production and Research Development and subdivisions be factors?
- 6. Will the National Inventors Council of the U. S. Department of Commerce leave unsolved problems for post-war solution?
- Will the accelerated research programs of industrial research laboratories help determine the program?
- 8. Will the various science foundations that are war creations play a part?
- How will the deliberations of the Association of American Colleges and of the American Council on Education function?
- 10. What will the studies of the National Association of Manufacturers and its regional committee accomplish?
- 11. How will the National Roster of Scientific Personnel and the Office of Personnel of the National Research Council serve?
- 12. Will post-war disclosures of scientific findings influence curricula?

⁴Contribution number 539 from the Department of Chemistry, University of Pittsburgh. Presented before the National Science Teachers' Association at its Pittsburgh Convention.

- 13. How will the deliberations of the American Council of Science Teachers and other science associations contribute?
- 14. How will science teachers themselves react?

1. Army and Navy Training Programs

It is hardly necessary to repeat the details of the Army and Navy training programs with which many of you are acquainted. Using chemistry as an example, we might note that the first twelve-week term did not include any laboratory work in general chemistry, and that for the second term. only four hours were scheduled, which included one hour of recitation or conference. With the advent of the Reserve Training Program, two hours of laboratory have been added to the first term. In the Pre-medical program, Qualitative and Quantitative Analysis were scheduled simultaneously, with six class hours and twelve laboratory hours assigned. Both of these courses departed strikingly from normal college curricula.

Will the time distribution for lectures, conferences, and laboratory practice change after the war? Will the Government under the G. I. Bill of Rights, which provides funds, furnish directives? Will the Veterans Bureau have a voice? Will the Army and Navy continue to specify what shall be taught? Will Government funds be furnished directly or through state education commissions? Will the

state have a voice in determining programs?

Will educational institutions serve, or initiate their own policies? Will the beneficiary say whether he shall carry a government-directed program or enter regular civilian courses? Your speaker frankly admits that these questions are beyond him. It would seem desirable to continue training in the fundamentals and to provide adequate facilities and time for their practical application. But whether courses will become more highly descriptive or more highly practical remains to be seen.

2. United States Office of Education

The United States Office of Education has provided funds for vocational training programs which have been controlled to an appreciable extent by the states. It has also provided funds for Engineering, Science and Managment Defense and War Training programs, respectively. The direction of these programs has been vested in the Commissioner of Education, in various divisional heads in Washington, in state officers, in regional coordinators, in college and university directors, and in departmental supervisors.

A proposal originated in a department and successively reached various officers in the reverse of the order just indicated. If the proposal was approved by the institutional director and the regional coordinator, it was submitted to Washington for approval. Various modifications were made, and specifications were introduced so that the institution could offer the course on the basis of the approved preliminary proposal. If the enrollment was sufficient, the course was given. It was either an inservice course for employees in industry, or available for individuals preparing to enter industry.

It might be a closed course to serve a particular plant or group of manufacturers, or it might be open to all comers. In addition to the initiation of the course by an educational institution, it could be initiated by a manufacturer or group of manufacturers. This program has been a real influence in the rapid training of technical personnel for industry.

"Enrollments in federal, state, and local training programs' authorized by Congress as a means of providing civilian war production workers with necessary skills, have totaled more than 12,000,000 in less than four years . . . Since 1940, 224 colleges and universities have participated in E.S.M.D.T. and E.S.M.W.T. to give approximately 34,000 short intensive course on the college level . . . Training-within-industry, in a little more than three and a half years, through intensive, short courses for supervisors has reached more than 800,000 supervisors with job instruction, 125,000 with job-methods training, and 235,000 through job relations. More than 12,000 plants have been assisted with an intensive program of 'up-grading' plant supervisors in skill of instruction, skill of improving methods, and skill of leading workers . . ."

With the increasing dearth of scientific personnel through the drafting of individuals under twenty-six years of age, a program like E.S.M.W.T. might be an asset not only to industry but also to colleges and universities in the planning of post-war evening programs. The courses mentioned were often available for high school graduates who had not had college training. Would the continuation of such a plan result in post-war practical training for high school graduates in industry and discourage college work?

3. Manufacturers' Courses

With keen competition and high wages, manufacturers, finding it difficult to locate workers, introduced short courses for the training of high school graduates and even individuals with less education. In these courses, apprentices were trained specifically to meet the needs of the employer.

They were paid during the training period and were given attractive compensations after the training period. The continuation of this practice would result in practical in-plant training and also lower the demand for college training. The president of

²Chemical and Engineering News 22, 809, May 25, 1944.

one of our great corporations³, in an article in one of our leading monthlies, has gone so far as to advocate the practical training, or "work with the hands" as he puts it.

He was an individual who rose from the ranks and states that if he had to live his life over again and were twenty-one years of age he would do exactly the same thing. He wants a young man to be a plumber or a carpenter or a machinist, and he decries the tendency of college and university graduates to sit at a desk and push a buzzer for someone else to do the work.

Experiments in industry in the rapid training of personnel to meet immediate needs constitute war research. They may be a factor in post-war training.

4. Office of Scientific Research and Development

This office with its divisions, the National Defense Research Committee and the Committee on Medical Research, has probably had the most profound influence of all investigating bodies in World War II. It has heard the needs of the Armed Forces, selected institutions, organizations, bureaus, and plants in which these needs could be met, and when facilities were entirely lacking, has created new units for the undertakings. It has transferred vast sums from government appropriations to the investigators.

One large educational institution, whose industrial research program amounted to about \$100,000 in 1940, conducted a program involving about \$25,000,000 in 1944. Most of this money probably was spent on government projects under contracts from the Office of Scientific Research and Development, the Army, the Navy, and the National Committee on Aeronautics. The institution conducted the researches without profit.

Appropriations ranging from the vast sum just mentioned to small amounts were made to institutions throughout the land where O.S.R.D. approved the personnel. In some institutions, these government contracts resulted in large increases of personnel which was transferred from other institutions. Some colleges and universities were greatly enriched in their research staffs; others, sadly depleted.

"In Washington last week" . . . four admirals, four scientists, three generals, a colonel, and . . . Charles E. Wilson, Vice-Chairman of the War Production Board" proposed a project of "a permanent scientific high command to prepare the U. S. to defend itself in any future war. It will undertake the first permanent mobilization of scientists in U. S. history . . . Though not yet fully charted in detail, the new office of military

PW. S. Knudson, "If I Were Twenty-one." American Magazine 127, 20, June, 1939.

Industrial Bulletin of Arthur D. Little, Inc., No. 200, page 2, May, 1944.

⁵Time, page 53, July 3, 1944.

science appeared likely to consist of a board of top U. S. scientists. The board would order and supervise government-financed research projects, which might either be farmed out to university laboratories under contract or carried out in government laboratories under the board's direct control. Its object would be to keep at least a nucleus of civilian scientists at work" after the war. According to Chairman Wilson, "In a nutshell, the purpose of his organization is to keep America not abreast, but ahead of the rest of the world."

Will this "Scientific High Command" be a continuation or outgrowth of O.S.R.D.? Will its policies be the same as were those of O.S.R.D.? Will scientific research personnel be taken from some institutions and given to others, as it has been, or will there be a redistribution so that institutions of higher learning throughout the land may encourage research? Answers to these questions will, to a large degree, determine how the graduate divisions of science departments will fare and what will be done in the graduate research laboratories during the postwar period. Post-doctorate research will probably be encouraged.

5. War Production Board

While the Office of Scientific Research and Development was more directly concerned with research problems originating in the Army and Navy Departments, the War Production Board, as its name implied, de-

voted itself chiefly to the practical aspects of method and manufacture. Contracts were awarded to manufacturers for the production of raw materials. New enterprises were subsidized. Individuals who proposed practical and promising researches received grants for their undertaking. The Office of Production and Research Development devoted its efforts also to practical experimentation, but more particularly to the suitable allocation of manufactures. The War Production Board was concerned chiefly with the awarding of contracts for raw materials and for finished products required by the Armed Forces. Experimental units were built in educational institutions and in war plants.

What influence will W.P.B. and O.P.R.D. exert on the practical side of post-war science training? Will the "Scientific High Command," formulated under the direction of Vice Chairman Wilson of the War Production Board, blend the influences of O.S.R.D. and W.P.B., or will one or the other of these predominate as a post-war influence on graduate and post-doctorate research?

6. The National Inventors Council, Department of Commerce

This group of scientists, which is trying to help solve perplexing war problems by giving publicity to the items, has stimulated voluntary interest in research. Many of the publicized problems will remain unsolved. They may find their way into the list of research topics of graduate students during the post-war period.

7. Accelerated Research in Industry

Industrial research laboratories have been given appreciable grants to accelerate research which would afford a particular industry competitive advantage and war contracts. Not all of these undertakings were selfish commercial enterprises. Disclosures which have been permitted already indicate important contributions to pure research.

The accelerated programs will have taught researchers new ways of tackling research problems. Will the leisurely research of the college professor and his graduate student suffer a reformation as a consequence? Will day-dreaming give way to scheduled progress, Will industry continue its own intensive research plans, or will it provide funds for the colleges and universities to undertake them?

8. Science Foundations

World War II has witnessed the birth of numerous science foundations. Millions of dollars have been poured into the funds, whose use was either limited, conservative, or liberal depending on the donors and the administrators of the funds. Some of the foundations established their own research centers; others made grants to research workers in industrial research laboratories; still others granted fel-

lowships to students in colleges and universities.

Science foundations are an outle: for industrial wealth and, in a limited number of instances, for individual fortunes. Some of these foundations have had a profound influence on research in the colleges and universities. They have been a real factor in encouraging graduate research departments. They have appreciably changed the pattern of graduate undertakings in science. They should prove a wholesome post-war influence in science training. What they accomplish will naturally depend on the policies of the various foundations and on the scientific personnel which directs them.

9. Educational Councils

The Association of American Colleges and the American Council on Education have both been active during the war. There have been frequent meetings of high officials of colleges and universities. There have been conferences with government representatives for the mutual purpose of meeting government needs and presenting the problems of the educational institutions.

These conferences may well be called educational research conferences. They have already succeeded in furnishing programs for the training of men in the Armed Forces and in bringing to the government's attention the immediate and post-war needs of educational institutions. These important organizations will continue to meet. They will be a significant influence in post-war planning.

10. National Association of Manufacturers

This association and its regional committees throughout the country have held many conferences which manufacturers and educators have attended. They are keenly aware of the importance of post-war educational service to industry. They are considering government appropriations for post-war use, for example, under the G. I. Bill of Rights and funds which go to veterans. They want to know whether these funds will be administered nationally, and whether the government, as it now does in its many three-or four-letter organizations, will establish bureaus and subcommittees in the states and counties and cities. They are deliberating whether federal judgment or the more localized state experience should determine how the funds are distributed. They have already adopted resolutions covering the manner in which they think government money could best be used by the states and counties and cities in furthering post-war education.

Will the directives come from Washington? Will they come from state departments of education? Will the grants depend upon state legislatures? Will representatives from the colleges and universities have a voice? Answers to these questions will de-

termine to what extent institutions will have enrollments for post-war study.

11. National Roster of Scientific Personnel

The National Roster of Scientific Personnel and the Office of Personnel of the National Research Council should become salient factors in postwar science training. Colleges and universities will face a serious readjustment problem. Many faculties have been depleted. A few have probably been enlarged far beyond practical post-war proportions.

The National Roster will furnish information concerning scientific personnel. The Office of Personnel of the National Research Council could be of service in redistributing the individuals and placing them where they are most needed. These two working together will re-establish balanced science faculties in American colleges and universities.

12. Post-War Disclosures

Occasionally we see announcements of important scientific discoveries which are being utilized in winning the war. These come through scientific journals, the public press, and even in industrial advertisements. Many will come after the war, though some will probably remain secret in the interests of post-war peace.

The disclosures which are made will win the admiration of certain individuals and will stimulate their interest in a particular kind of scientific endeavor. The new interests may result in new offerings in science departments. Will electronics and air-mindedness modify our courses and even our curricula? We shall see.

13. The American Council of Science Teachers

You ladies and gentlemen and other groups of science teachers in all parts of America engaged in studies of the type now under construction, will bring a correlated picture of the problems that confront us to the individual science teachers in our colleges and universities. You may make recommendations. You may simply present the facts of findings and leave the decisions to the science teachers themselves. You will be an important factor in the post-war planning.

14. The Science Teachers

The final responsibility will rest with the science teachers themselves. Those who are real students will consider progress the essence of teaching success. They will digest the products of World War II. They will be inspired by the findings. They will stimulate the interest of post-war students. As the result of war experiences, many will manifest greater interest in research than they held during the pre-war period. Their own experiences in research and in the service will color the teaching picture. They will still stress the fundamentals which are the foundations of all good

teaching, but there will be an enriched application of these fundamentals which has come from World War II.

Will teaching continue as the intensive non-interrupted program of the war, or will we return to the more leisurely plan with the pre-war vacations? Some will advocate the more rapid accomplishment of the intense program; others will favor the intermittent dreaming and subsequent realization of the dreams which intense application excluded. Both plans will probably become effective.

Under either it is desirable to maintain high scholastic standards. There has been some talk about the possible lowering standards to secure enrollments which will insure financial support. It will be better to offer less pretentious curricula for individuals who are not qualified than to lower the scholastic requirements as a whole.

In a communication to the College Faculty of the University of Pittsburgh on May 23, 1944, Professor Richard Hope wrote, "The aim of all education, stated in one possible appropriate phrase, is freedom through intelligence... As, teachers, we consecrate ourselves to a whole-hearted pursuit of things of the mind, making the reasonable demand upon society to render such a life-long devotion to significant learning possible."

Education has had many stimuli during World War II. There has been a government interest and an interest on the part of manufacturers which has never been equaled in the past. With adequate support and with suitable encouragement, our high schools, colleges, and universities can render a service to the sciences which will be one of the most wholesome influences in the post-war period. Science is, after all, a search for the truth. It is, therefore, an important ethical factor. Appropriately interpreted and utilized, it will help to insure security and promote "peace on earth and good will towards men."



Biologists Recommend World Cooperation

A memorandum recommending closer cooperation among scientists throughout the world, was prepared by a group of scientists at the Marine Biological Laboratory, Woods Hole, Mass., and sent to the Department of State. The following excerpt from the letter of acknowledgement is of interest to all scientists:

"The proposals embodied in the memorandum, which has been referred to the Division of Cultural Cooperation for study, seem to me to be excellent starting points for formulating a general program of scientific exchanges. The reestablishment of relations with the scientists of the Axis countries is, indeed, a delicate matter that must be given careful consideration by both scientists and governments. In-

asmuch as the Department has begun only recently to study the place of science in the general cultural relations program, it welcomes the cooperation of your group in this work. In fact, the Department is convinced now that a proper place can be given to science in this program only if full cooperation can be organized between the scientists, esepcially through their professional organizations, in the various fields and the Department. I assure you, therefore, that the Department will welcome further opportunities to consider with your group the international interests of biologists."

New Laboratory at Brooklyn Polytechnic

The installation of a new laboratory at the Polytechnic Institute of Brooklyn was announced by Dr. Raymond E. Kirk, F.A.I.C., head of the Department of Chemistry and Dean of the Graduate School.

The new laboratory will be under the direction of Dr. Kurt G. Stern, who was recently awarded a grant of \$19,000 from the Carrie S. Scheuer Foundation of New York for fundamental research on proteins and high polymers. Dr. Stern selected the Polytechnic Institute in which to use the grant, where he plans to work in close cooperation with the research group of Dr. Herman F. Mark, professor of organic chemistry, and authority on highpolymer chemistry.

Northern Ohio Chapter Formed

ANEW Chapter of the AMERICAN INSTITUTE OF CHEMISTS, to be called the Northern Ohio Chapter, was granted its request for a charter at the meeting of the National Council held on December sixth.

The new chapter will have headquarters in Cleveland, Ohio under the temporary chairmanship of Dr. H. F. Frank, Sherwin Williams Company, 101 Prospect Ave., Cleveland, Ohio.

Nobel Prize Awards

The 1944 Nobel prize in physics was awarded to Dr. Isidor I. Rabi, of Columbia University, for his discovery of atomic radiations which are lower in pitch than those previously reported, and for the origination of a magnetic resonance method for measuring them.

Professor Georg von Hevesy of the Danish Institute of Theoretical Physics, Copenhagen, now living in Sweden, received the 1943 Nobel Chemistry award for his work in the use of isotopes as indicators in studying chemical properties. The 1944 chemical award will not be made until next year.

Monsanto Develops Launching Propellent for Robombs

Plans for the manufacture of a launching propellent, for American models of the robot bomb, by Monsanto Chemical Company were announced by Monsanto officials and the Army Air Forces Technical Service Command, Wright Field, Dayton, Ohio. Monsanto is building an \$8,000,000 plant at Karnack, Texas, and is one of the American companies cooperating in production of robot type aircraft.

Development and testing of the propellent were accomplished through cooperation of Monsanto, the National Defense Research Council, and the Air Technical Service Command. Dr. Charles Allen Thomas, F.A.I.C., head of Monsanto's Central Research Laboratories at Dayton, had a leading role in directing the research.

Snell Speaks on Substitutes

Foster D. Snell, F.A.I.C., recently spoke before the Rotary Clubs of Brooklyn and Glen Cove, New York, on postwar uses for wartime substitutes. He predicted that about fifty per cent of the United States' postwar rubber consumption would be met by synthetic rubber, because of the slow return to production by the natural plantations. He also stated that many wartime substitutes have been more expensive and less satisfactory than the materials they replace.

The Problems of Penicillin's Components

Ralph H. Steinberg, F.A.I.C.

THE chemical constitution of penicillin is still undecided. The drug itself has not been isolated and even when it is isolated, there will be much difficulty in establishing its structure because of its extreme lability. It decomposes rapidly under almost every condition except extreme cold or being kept cool in a vacuum.

Some investigators claim that the purer the product, the higher the nitrogen content (1). The following formulae have been suggested and their diversity demonstrates the difficulties which beset the purification process.

$$\begin{array}{c} C_{24}H_{32}O_{10}N_{2}Ba \\ & \text{or} \\ C_{23}H_{30}O_{9}N_{2}Ba \\ C_{14}H_{19}NO_{6} \end{array} \qquad (')$$

The first two formulae are suggested as the barium salts. The third and fourth are suggested for penicillic acid and the fifth as the strontium salt.

The radiation absorption bands of the purified product are reported by one observer (3) as 2470 and 3000 Angstrom units at a drug potency of 480 Oxford units per milligram, by a second observer (*) as 2650 Angstrom units at a potency of 750 Oxford units per milligram. This variance again demonstrates that much work is still to be done on the purification.

Following is a list of bacteria, more or less well-known, and their susceptibility to penicillin therapy.

Hasuscentible

Succeptible

O MOLE PROPER	O M3 H2 LE PEROLE
Bacillus diphtheriae (4) Clostridia—most types	Bacillus acne (*) dysenterium (*)
Meningococcus (8)	enteridis (7)
Micrococci—some types	" influenzae (*)
Gonococcus	" typhosus (1)
Pneumococci I, II, III	Enterococci-most types
Staphylococci—most types	Coli-most types
Streptococci—all types except the enterococci	Influenza virus (*) Monilia-most types
4	Micrococci-some types

Some strains of the susceptible types may be more or less resistant, and likewise some strains of the unsusceptible types may be somewhat susceptible to penicillin therapy.

Who will be the chemist first to determine the chemical constitution of penicillin?

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W. O. Brewer, F.A.I.C. of the Calco Chemical Division of American Cyanamid Company, Bound Brook, N. J., was elected vice president of the Packaging Institute, at its recent annual meeting in New York. He presided over the session of Drug and Pharmaceutical Manufacturers held during the convention.

Annual Meeting 1945

The Twenty-third Annual Meeting of THE AMERICAN INSTITUTE OF CHEMISTS will be held in Columbus, Ohio. The date for this meeting has been tentatively set for the middle of April.

Schwab Elected Treasurer of Heyden

B. R. Armour, president of Heyden Chemical Corporation, announces the election of George B. Schwab as treasurer and director of the Corporation. For the past seven years, Mr. Schwab has served as treasurer and director of The Aspinook Corporation in Jewett City, Connecticut, dvers and finishers of textiles.

Skett with R. B. H. Dispersions

Anthony Skett, F.A.I.C., is now connected with R. B. H. Dispersions, Inc., Bound Brook, N. J. He was formerly with the American Gum Importers' Association, Brooklyn, N. Y.



A new slide rule which contains a decimal point locator is announced by Pickett and Eckel, 53 West Jackson Blvd., Chicago 4, Illinois. This "Deci.-Point" slide rule will determine decimal points to 19 digits.

Kendig Receives Remington Medal

The Remington Honor Medal of the New York Branch of the American Pharmaceutical Association was presented to Dr. H. Evert Kendig at a dinner held in the Hotel Pennsylvania, New York, on December 12th.

Dr. Kendig is dean of the School of Pharmacy of Temple University and has long been active in the American Pharmaceutical Association, and as chairman of the Joint Committee on the Status of Pharmacists in Government Service, contributed to the enactment of the Pharmacy Corps Law.

Dowe Appointed Sales Manager

Frank Dowe, Jr., has been appointed sales manager of vitamin products, it was announced by R. W. Albright, General Manager of Distillation Products, Inc. Sales offices will be established in New York and Chicago. Distillation Products, Inc., heretofore has used the General Mills subsidiary as its sales outlet in the vitamin field.

Quill to Head Chemistry at Michigan State College

Laurence L. Quill, F.A.I.C., chairman of the Department of Chemistry, University of Kentucky, will take over the headship of the Department of Chemistry, at Michigan State College, East Lansing, Michigan, on January first,

Kingery Manager of Hercules Hopewell Plant

Clark B. Kingery, assistant manager of Hercules Powder Company's Parlin, N. J., chemical plant, has been named manager of the Cellulose Products Department plant just established at Hopewell, Virginia.



Gustav Egloff, president, A.I.C., spoke on "New Things for More People" at the 1944 annual meeting of the National Association of Manufacturers held at the Waldorf-Astoria Hotel, New York, N. Y., on December sixth.

Otto Eisenschiml, F.A.I.C., has written a fiction piece entitled "War of the Rheingold" to be published in the January Esquire. The story deals with the possible results of German scientific experimentation, if it is allowed to continue after the end of the World War II.



Moore Now Director of New Products for Celanese

Leonard P. Moore, F.A.I.C., formerly with the American Cyanamid Company, has been appointed director of the New Product Division of the Celanese Corporation of America, 180 Madison Ave., New York 16, N. Y.

Walsh Appointed Manager

Leo J. Walsh has been appointed manager for General Mills vitamin product sales, according to Harry A. Bullis, president of the company, in Minneapolis. Mr. Walsh will take over the New York Offices at 80 Broad Street of the company's Special Commodities Division, assuming the duties formerly assigned to Mr. Frank Dowe, Jr., who has resigned to become sales manager of vitamin products for Distillation Products, Inc., owned jointly by General Mills, Inc., and Eastman Kodak Company.



William J. Sparks, L.A.I.C., assistant director of the Esso Laboratories, spoke recently on "Hydrocarbon Polymers," before the Peoria, Illinois, section of the American Chemical Society.

G. Frederick Smith, F.A.I.C., professor of chemistry of the University of Illinois, spoke on "Problems in the Small Scale Manufacturing of Reagent and Process Chemicals" before the Peoria Section of the American Chemical Society.

Ed. F. Degering, F.A.I.C., professor of chemistry at Purdue University, discussed "What's Tomorrow Got that Today Hasn't Got" before a meeting of the Veedersburg Lions Club recently in Lafayette, Indiana.

"In the past the scientist has played too small a role not only in the affairs of the world, but in the responsibilities of our own governmental agencies. Men who are trained in the development, utilization and control of the great natural resources must and will take a larger part in the formulation of laws and the shaping of policies. As a citizen the technologist has a special responsibility, because he has had a special training."

—WALTER J. MURPHY, F.A.I.C.

During the week of December eleventh, Dr. Gustav Egloff, F.A.I. C., addressed the following sections of the American Chemical Society in Texas: Texas-Louisiana Gulf Section, Port Arthur; Southeastern Texas Section, Houston; Texas A. & M. Section, College Station; Central Texas Section, Austin; Dallas-Fort Worth Section, Fort Worth; and Panhandle Plains Section, Amarillo. His subject was "Petroleum as a Chemical Industry."

Necrology

M. Catesby Jones

W. Catesby Jones, chief chemist of the Department of Agriculture, Division of Chemistry, Richmond, Virginia, died recently.

He was born June 9, 1881, at Lynchburg, Virginia, and majored in chemistry at Virginia Polytechnic Institute. From 1900 to 1911, he held various positions as analytical chemist. After serving two years as chemist for the Virginia Carolina Chemical Company, he was appointed chemist in the Department of Agriculture of the State of Virginia, where he remained until his death.

During World War I, he was in the Gas Defense Service and Chemical Warfare Service at the American University Experiment Station, Washington, D. C., and in June 1919 he was honorably discharged with the rank of Major.

He became a Fellow of The American Institute of Chemists in 1940.

Gustane P. Metz

Gustave P. Metz, F.A.I.C., retired assistant manager of the Bayer-Winthrop plant, Rensselaer, N. Y., and former vice-president of the H. A. Metz Laboratories, Inc., Rensselaer, died at his home after a long illness on April 7th, at the age of 69.

A native of New York City, Dr. Metz received the degree of graduate chemist from Cooper Union, and later studied in Switzerland. Prior to coming to Albany, Dr. Metz was associated with the Consolidated Color and Chemical Company in New York, of which his brother was president. He became a member of The American Institute of Chemists in 1924.

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THE 216th meeting of the National Council of The American Institute of Chemists was held on Wednesday, December 6, 1944, at the Building Trades Employers' Association Club Rooms, 2 Park Avenue, New York, N. Y., at four p. m. with president Gustav Egloff presiding.

The following officers and council-

ors were present: Messrs. Stuart R. Brinkley, Gustav Egloff, Frederick A. Hessel, John M. McIlvain, Donald B. Keyes, Raymond E. Kirk, Robert J. Moore, Howard S. Neiman, Donald Price, Foster Dee Snell, A. Lloyd Taylor and Maximilian Toch.

Dr. Charles W. Rippie, Mr. T. S. McCarthy, and Miss V. F. Kimball were present.

The minutes of the previous meeting were approved.

The treasurer's report was read and accepted.

Upon motion made and seconded the application of members of The American Institute of Chemists in Northern Ohio for a chapter of the Institute was approved, and the Council cordially welcomed this new addition to the present chapters of the Institute. Headquarters for the new chapter will be in Cleveland, Ohio, under the temporary chairmanship of Dr. H. F. Frank.

Upon motion made and seconded Dr. Donald Price and Dr. Robert J. Moore were appointed a committee to recommend suitable changes in the current leaflet of the INSTITUTE, which describes its activities.

A letter was read from Mr. Frank G. Breyer in which he tendered his resignation from the Council for the duration of the war, because of the fact that he is frequently called out of the country and unable to attend meetings. Upon motion made and seconded, Mr. Breyer's resignation was accepted and the deep appreciation of the Councilors was expressed for the services which he has rendered while continuing in office.

Upon motion made and seconded, Harry B. McClure, vice president of Carbide and Carbon Chemicals Corporation, was appointed to fill the unexpired term of Mr. F. G. Breyer as Councilor. A telegram from Dr. E. L. Luaces was read in which the Miami Valley Chapter cordially invited the Institute to hold its next Annual Meeting in Columbus, Ohio. After discussion and upon motion made and seconded, it was decided that the 1945 Annual Meeting of The American Institute of Chemists will be held in Columbus, Ohio, with the date tentatively set for the middle of April, 1945.

Dr. Egloff reported his visit to the Los Angeles Chapter and praised this chapter for its interest and activity.

Upon motion made and seconded it was decided that The Chemist should be published twelve times a year instead of nine times as at present.

Suggestions were made for material to be included in The Chemist and discussion took place regarding the type of articles which the members were interested in reading.

The matter of a full-time managing director for the INSTITUTE was discussed at length, and the Council will continue its search for a suitable person.

Upon motion made and seconded the following new members were elected:

Life

Dienner, John Astor

Member of Firm: Brown, Jackson, Boettcher & Dienner, 53 West Jackson Blvd., Chicago 4, Illinois.

Fellows

Andrews, Harry

(1944), Li. Col., Ordnance Department, Chief of Maintenance, Tooele Ordnance Depot, Tooele, Utah.

Berglund, O. William

(1944), Chemical Engineer, Chemical Developments Corporation, 1771 Springfield Street, Dayton 3, Ohio.

Beynon, Nathan T.

(1944), Chemical Engineer, Chemical Developments Corporation, 1771 Springfield Street, Dayton 3, Ohio.

Bremer, Clarence

(1944), Organic Chemist, Oakite Products, 22 Thames Street, New York 6, N. Y.

Carlson, Anton J.

(1944), Emeritus Professor of Physiology, University of Chicago, Chicago, Illinois.

Dow, Willard H.

(1944), President, Dow Chemical Company, Midland, Michigan.

Elder, Albert L.

(1944), Director of Research, Corn Products Refining Company, Argo, Illinois.

Elsenbast, Arthur

(1944), Vice President, Johns-Manville Sales Corporation, 22 East 40th Street, New York, N. Y.

Fair, William F.

(1944), Senior Fellow, Mellon Institute of Industrial Research, Pittsburgh, Pennsylvania.

Ferguson, James W.

(1944), Chemist, Development Group, Eli Lilly & Company, Indianapolis 6, Indiana.

Fryer, Louis S.

(1944), Vice President in Charge of Production, Industrial Rayon Corporation, 9801 Walford Avenue, Cleveland 1, Ohio.

Gardner, George S.

(1944), Research Chemist, American Paint Company, Ambler, Pennsylvania.

Lanwermeyer, Charles F.

(1944), Pharmaceutical Research Chemist, Abbott Laboratories, North Chicago, Illinois.

Lichtenberg, Harry F.

(1944), Technical Director, The Mentholatum Company, 1360 Niagara Street, Buffalo 13, New York.

Martin, Samuel W.

(1944), Supervisor Chemical Research, Institute of Gas Technology, 3300 Federal Street, Chicago, Illinois.

Miron, Simon

(1944), Organic Research Chemist, Lion Oil Refining Company, El Dorado, Ark.

Nelson, Albert B.

(1944), Instructor, Rhode Island State College, Kingston, Rhode Island.

Nelson, Casper

(1944), Smelter Superintendent, United States Smelting Refining & Mining Company, Midvale, Utah.

Obold, Walter L.

(1944), Professor Biological Sciences, Drexel Institute of Technology, Philadelphia, Pennsylvania.

Reiche, Maximilian O.

(1944), Chemist & Superintendent, Economy Blue Print Products Company, 1718 North Damen Avenue, Chicago, Illinois.

Riez, Charles H.

(1944), Research Chemist, Institute of Gas Technology, 3300 Federal Street S., Chicago 16, Illinois.

Robinson, Paul

(1944), Supervisor of Research, E. I. du Pont de Nemours & Company, 3500 Grays Ferry Road, Philadelphia, Penn.

Schultz, Joseph

(1944), Chief Chemist, Lady Esther, Ltd., 7171 West 65th Street, Chicago, Illinois.

Trevithick, Gladys I.

(1944), Director, Lux College, San Francisco, California.

Venema, Maynard P.

(1944), Manager Patent Department, Universal Oil Products Company, Chicago, Illinois,

Members

Brna, Paul W.

(M.1944), Chief Chemist, Chicago Pharmacal Company, 5547 Ravenswood Ave., Chicago 40, Illinois.

Clendenin, William H.

(M.1944), Chemical Engineer, The Wilson Laboratories, 4221 S. Western Ave., Chicago, Illinois.

Giuliani, Chester J.

(M.1944), Assistant Manager Patent Department, Universal Oil Products Company, Chicago, Illinois.

Goepfert, Werner F.

(M.1944), Research Chemist, Interchemical Corporation, 432 West 45th Street, New York, N. Y.

Harris, Ellery G.

(M.1944), Chemist, Superintendent Liquid Plastics Division, Ferro Enamel Corporation, Cleveland, Ohio.

Holland, William F.

(M.1944), Chemist, Standard Varnish Works, Staten Island, N. Y.

Joffre, Stephen P.

(M.1944), Chief Chemist, The Drug Products Company, Long Island City, N. Y.

Pitha, John J.

(M.1944), Research Associate, Brooklyn Polytechnic Institute, Brooklyn, N. Y.

Pompa, James P.

(M.1944), Chief Chemist, Standard Pharmacal Company, Chicago, Illinois.

Sittenfield, Marcus

(M.1944), Process Chemical Engineer, Publicker Commercial Alcohol Company, 1429 Walnut St., Philadelphia, Penn.

Waters, Robert B.

(M.1944), Technical Representative, Bakelite Corporation, 1501 Euclid Avenue, Cleveland, Ohio.

Associate

O'Brien, Marian M.

(A.1944), Patent Abstractor, Universal Oil Products Company, Chicago, Illinois. There being no further business, adjournment was taken.



Science features "The History of Science in Postwar Education" by Professor Henry E. Sigerist of Johns Hopkins University, in its November 10th issue.

CHAPTERS

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 Alternate, Julius F. Mueller
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Council Representative, A. Lloyd Taylor

News Reporter to THE CHEMIST, Arthur DeCastro

THE New York Chapter met December first at 2 Park Avenue, New York, N. Y. Speakers were Colonel L. T. Sutherland, assistant chief, Technical Division for Manufacturing and Procurement, Chemical Warfare Service, U. S. Army, Edgewood Arsenal, Maryland; and Dr. C. L. Mantell, consulting chemical engineer, New York.

Colonel Sutherland reviewed briefly the history and development of various plastics and asked his audience to consider the factors which would affect the future of this promising industry, which is now contributing so much to the equipment of the armed services.

Dr. Mantell spoke on "The Nonferrous Metals During the War and the Postwar Period," and he traced the rapid rise in the production of such metals as aluminum, magnesium, sodium, beryllium, and tin, after the onset of the war. It was pointed out that the plastics and the metals are not in competition for most uses, but that each has characteristics which make it more suitable for the particular application.

Due credit for our rapid development of the metals should be given to the research and production facilities of the larger concerns which put their research and knowledge at the disposal of the nation during the war emergency.

The metallurgists are making metals behave like plastics when they use powdered metals for the production of pressure molded parts. Powder metallurgy has grown rapidly in stature from 1930, to be present time.

Niagara

Chairman, M. R. Bhagwat

Vice-chairman, Frederick L. Koethen

Secretary-treasurer, Frederick L. Sievenpiper
National Aniline Division
Allied Chemical and Dye Corp.
Buffalo, New York
Council Representative, Arthur W. Burwell

Alternate, Alvin F. Shepard
Reporter to THE CHEMIST, John E. Scubert

THE Niagara Chapter met November tenth at Tuyn's Restaurant, Buffalo, N. Y. A short business meeting was presided over by M. R. Bhagwat, chairman.

Dr. Raymond E. Kirk of the Brooklyn Polytechnic Institute, spoke on "Professionalism Is the Answer for the Chemist." He mentioned that there is one important difference between technical and scientific personnel, and the present professional group. Most chemists, physicists and engineers are on a plant payroll, while the physicians, dentists and lawyers are generally individually employed.

In connection with the efforts of chemists to consider themselves as professional men, Dr. Kirk brought up a very interesting point when he tried to define a chemist. The only definition he could find that would hold water is that a chemist is a man who claims to be a chemist and makes a living at it.

There has been an increase in interest, in industrial areas for forming organizations with powers of collective bargaining as authorized under the Wagner Act. One important point that can not be overlooked is the danger of a union becoming dominated by a professional union delegate.

Management has learned to go along with trade unions but as yet has not learned to go along with technical personnel. It would be to management's advantage to go along with professionalism. Organizations such as The American Institute of Chemists can serve as catalytic masses among chemists to stimulate professional feeling.

There are several ways whereby we can help to promote professionalism. By the organization of groups to promote professionalism. By the education of management to the desirability of professional standing for properly qualified chemists, with adequate financial return to stimulate creative ability. By the education of young chemists in professionalism.

Pennsylvania

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Secretary-treasurer, Kenneth E. Shull
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Bala Cynwyd, Pennsylvania
Council Representative, John M. McIlvain

Washington

President, L. F. Rader, Jr.

Vice-president, L. R. Heiss

Treasurer, T. H. Tremearne

Secretary, Ernest J. Umberger
207 Albany Avenue, Takoma Park, Maryland
News Reporter to THE CHEMIST, S. W. Griffin
Council Representative, T. H. Tremearne

Western Pennsylvania

President, Henry G. Goodman, Jr. Vice-president, Henry F. Smyth, Jr.

Secretary-treasurer, Jacqueline S. Front

Mellon Institute of Industrial Research

Pittsburgh 13, Pennsylvania

Council Representative, William H. Hill

N November 17th, the Western Pennsylvania Chapter of The American Institute of Chemists held its annual meeting. The dinner-business meeting was attended by 24 members, Dr. M. L. Crossley, and Dr. Paul Gross of the local medical association.

Elections were held and the officers elected in May were reelected: Dr. Henry G. Goodman, Jr., Chairman; Dr. Henry F. Smyth, Jr., Vice Chairman; Miss Jacqueline S. Front, Sec-

retary-Treasurer; and Dr. William H. Hill, Council Representative.

Local doctors, nurses, pharmacists, and university staffs were invited to attend the open meeting following the dinner. One hundred and seventy persons were in attendance at the Mellon Institute Auditorium to hear Dr. M. L. Crossley speak on the "Sulfa Drugs." Dr. Paul Gross spoke briefly on the subject from the viewpoint of the Pathologist; Dr. John W. Shirer from the viewpoint of the Surgeon.

For Your Library

THE FUNDAMENTALS OF CHEM-ISTRY. By Monroe M. Offner, Ch. E. New Home Library publication No. 87. 408 pp. 5½" x 8". \$0.69.

This reprint of a textbook suitable for those unfamiliar with chemistry contains many fundamental facts about chemistry and its applications to modern living.

Its style is clear and interesting with emphasis on summaries of each chemical field so that the adult or student unfamiliar with chemistry will obtain a general picture of the place of chemistry in his daily life.

INORGANIC CHEMISTRY. Fritz Ephraim. Edited and revised by P. C. L. Thorne and E. R. Roberts. 4th Edition, 1944. Nordeman Publishing Company. 921 pp. 6½" x 9½". \$8.75.

This is the first American photoreprint edition of the Fourth revised English edition (1943) of Ephraim's "Inorganic Chemistry."

Recent work on isotopes and radioactivity has been included, together with descriptions of compounds and reactions published since the preceding edition of this work in 1939.

The contents are grouped into five divisions: I. Elements; II. Halogen

Compounds; III. Oxides of Hydrogen and the Metals; IV. The Compounds of Sulphur, Selenium and Tellurium, and V. The Nitrogen, Phosphorus, Arsenic Group.

An appendix contains instruction on literature searching in inorganic chemistry; the periodic classification, and crystal structure diagrams.

This volume is designed to be a satisfactory reference work in its field.

ANCIENT AND MEDIEVAL DYES. By William F. Leggett. Chemical Publishing Company, Inc. 95 pp. 5 x 73/4". \$2.25.

The use of vegetable dyes dates back to earliest antiquity, when color was used to protect the wearer from evil spirits.

In ancient times more than one thousand plant sources of dyes were used, but the advent of trading in dyestuffs reduced this number to only a few of the most profitable, among which were madder, indigo, woad, saffron, safflower, weld, Brazilwood, logwood, barwood, camwood, the fustics, orseille, cudbear, annatto, turmeric, cutch, gambir, quercitron, and the animal dyes, tyrian purple, kermes, cochineal, and lac, with a few mineral colors.

The history of each of the dyes listed above is covered in this book in a popular and readable style with anecdotal material illustrating its importance to different periods of European and Middle Eastern history.

Quotations from the older writers are freely interspersed to show the recognition of the use of various dyestuffs. For example, Caesar stated that "All Britons stain themselves with woad which grows wild and produces a blue color which gives them a terrible appearance in battle."

The book, though not technical, will provide fascinating background material on the history of natural dyestuffs.

ORGANIC SYNTHESES. Vol. 24. Nathan L. Drake, editor-in-chief. John Wiley and Sons, Inc. (1944). 119 pp. 6" x 9". \$2.00.

This publication of satisfactory methods for the preparation of organic chemicals is issued by an editorial board consisting of Nathan L. Drake, editor-in-chief; Homer Adkins, C. F. H. Allen, W. E. Bachmann, C. S. Hamilton, R. L. Shriver, Lee Irvin Smith, and H. R. Snyder, with many well-known contributors, and is an eminently satisfactory addition to the annual volumes of this series.

Oil and Soap for October carries an article on the "Economic Position of Oils and Fats in the War & Postwar Periods," by Robert M. Walsh, of the Bureau of Agricultural Economics. Latin American Fellowship

Dr. Rafael Aureliano Labriola, chief of the laboratory of organic chemistry, faculty of science, University of Buenos Aires, Argentina, has been awarded a Guggenheim fellowship for studies of the techniques of hydrogenation at normal and high pressures. Dr. Labriola will work at the universities of Minnesota and Wisconsin.

Inquiry

"We want a list of materials and where to obtain them that they may be used in making screens or baskets that will not corrode or disintegrate when dipped into water saturated with clorine gas. Include other materials along with metals. Either woven material or perforated sheets can be used. Possibly perforated plastic sheets may be obtainable. We require these to build a basket or tumbler three feet in diameter and five to six feet long.

"We use chlorine gas to chlorinate rubber articles. If you have information in addition to above as to methods used, please advise."

Please send suggestions to Box 1011, The Chemist.



The Cellulose Products Department of Hercules Powder Company, Wilmington, Delaware, has issued a four-page folder in color to illustrate the properties of the cellulose plastics family.

Prize Contest on Utilization of Cured Synthetic Scrap Rubber

THE Chicago Rubber Group is sponsoring a cash prize contest for the best papers on the utilization of cured synthetic scrap rubber. This problem is of vital interest to the rubber industry and it is hoped that this contest will stimulate interest in this subject and result in many worthwile suggestions.

The papers should be based on information which has not previously been presented before any technical meeting or published in any trade magazine. The Utilization of Cured Synthetic Rubber is a subject of broad scope and authors may submit papers on any phase of the problem. Some of the headings under which the subject may be handled are: 1. Separation and Segregation of Synthetic Scrap Rubber. 2. Methods of identification of Synthetic Scrap Rubber. 3. Reclaiming of Synthetic Scrap Rubber. 4. Compounding studies which will result in greater use of reclaimed Synthetic Scrap Rubber. 3. Compounding studies which will result in greater use of Ground Synthetic Scrap Rubber.

Anyone in the United States or Canada may submit a paper. Officers and directors of the Chicago Rubber Group for 1943-1945 may not compete. The contest will close on midnight of August 1, 1945. First prize will be \$500, Second prize \$300 and Third prize \$200. Awards will be made at the time of the fall meeting of the American Chemical Society in Chicago, 1945.

Each author shall submit three copies of his paper to Mr. A. R. Floreen, Vice President, City National Bank and Trust Co., 208 S. La Salle St., Chicago 90, Ill., who will assign a number to each paper and forward one coded copy to each judge. The papers shall contain no information that may identify the author.

Three judges will pass on the merits of each paper. One judge will be selected by the Rubber Manufacturers Association, another by the Rubber Reclaimers Association and the third by the Rubber Division of the American Chemical Society.

The judges will report their findings to Bruce W. Hubbard, Chairman Chicago Rubber Group, 2512 W. 24th St., Chicago, Ill.



The latest publication of the War Manpower Commission is entitled, "Training and Reference Manual for Job Analysis," which is designed to aid employers in the solution of postwar recruitment and placement problems. Information about this and other publications may be obtained from the War Manpower Commission, Division of Occupational Analysis, Washington 25, D. C.

RECENT REINHOLD BOOKS

FATS and OILS

An Outline of Their Chemistry and Technology By H. G. KIRSCHENBAUER

Research Chemist, Colgate-Palmolive-Peet Co.

There is great need for a condensed treatment of the fundamentals of the chemistry and technology of vegetable fats and oils. No attempt has as yet been made to present this highly important and useful information in such a way as to meet the requirements of those practically engaged in the industries which utilize these materials directly or indirectly. The present outline is an attempt to fill this need.

It covers the nature, methods of processing, chemical structure and diverse uses of both animal and vegetable oils and fats. The text is amplified with tabular data, diagrams and illustrations.

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PROTEINS, AMINO ACIDS AND PEPTIDES As Ions and Dipolar Ions

By EDWIN J. COHN and JOHN T. EDSALL Harvard Medical School

This masterly treatise on the physical chemistry of proteins, amino acids, and peptides will long stand as a scholarly monument of immense value and interest to chemists, biologists, immunologists, physicians, and investigators in related fields. Carefully prepared, this volume covers its subject exhaustively and is indispensable as a reference work or a compendium of information in this important and rapidly expandingg field of science.

A.C.S. Monograph No. 90

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CHEMICAL MACHINERY

An Elementary Treatise on Equipment for Process Industries By EMIL RAYMOND RIEGEL

Professor of Industrial Chemistry, University of Buffalo Author of "Industrial Chemistry"

PRACTICAL-COMPREHENSIVE-AUTHENTIC-this book is the result of hundreds of inquiries from educational institutions and from all branches of industry. From screens to heat exchangers, from bucket elevators to potentiometers, each of the major types of equipment used in the chemical and process industries is described in detail. Specifications and latest available prices are included wherever possible. Classification of equipment by function gives the discussion a natural and logical organization which will appeal both to students and to those who are interested primarily in obtaining the machine best suited for their particular requirements.

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Alexander Silverman, F.A.I.C., head of the Department of Chemistry, University of Pittsburgh, lectured before section meetings of the American Chemical Society, held at St. Louis, Missouri, November sixth; Kansas City, Missouri, November eight; Wichita, Kansas, November ninth, and Tulsa, Oklahoma, November eleventh. Dr. Silverman's topic was "Glass After the War."

From Italy

Dr. Gustav Egloff:-

It was a delight to receive your letter . . . even though it had to travel nearly 7000 miles to find me in Italy.

While I have met quite a number of men here who have been trained in chemistry and chemical engineering, practically none of them are performing duties requiring such knowledge and oddly enough, I have met quite a number who are in Chemical Warfare Service and yet had no or very little training in chemistry.

Opportunity has been afforded to visit a number of universities and it has been indeed heart-breaking to see chemical laboratories literally torn to pieces, if not the buildings demolished then the interior; libraries destroyed, valuable equipment wrecked and the worst of vandalism displayed. It is to be hoped those who make the peace do such an excellent job that such a

thing can never again happen to our so-called civilized world.

Our Institute's publication THE CHEMIST has been received regularly and is being passed on to some of the foreign chemists I have met.

With best of wishes to you personnally and to the INSTITUTE generally, I am

Sincerely,
HARRY L. COLE, F.A.I.C.
Lt. Col. Air Corp.
(On leave from Department
of Chemistry, State College
of Washington)



About twenty industrial organic chemists in southwest Virginia attended the U. S. Office of Education sponsored E. S. M. W. T. course, "Organic Chemistry Refresher" with Dr. Ashley Robey, F.A.I.C., as lecturer, during the last school year. This year the group has persuaded the sponsors and instructor to offer a course in organic analysis. The class meets each Friday evening at the Lucas Chemistry Laboratories, Roanoke College, Salem, Va.

Egloff Awarded Honorary Degree

Gustav Egloff, F.A.I.C., was awarded the Doctor of Science degree, honoris causa, by the Philadelphia College of Pharmacy and Science, at its recent Commencement Exercises.

Cevlon Association of Science

The Ceylon Association of Science was formed July 29th, at the University of Ceylon. The objectives of the new association are the advancement of pure and applied science in the Island, the holding of an annual session and the dissemination of scientific knowledge. Dr. N. Wadia, former president of the Indian Science Congress, was elected general president, V. Gabriel, senior surgeon, General Hospital, Colombo, was chosen president-elect.



The members of the Chicago Section of the American Chemical Society have prepared a booklet on "The Chemist and the Chemical Engineer in Industry."



"One of the roots of the tree of peace is science. From root to crown there is a continuous flow of discovery, for modern civilization insistently demands new and improved forms of satisfaction and security. The creative powers of science can quickly make up some of the losses of war. We need new industries more than ever, more idle land put to use in new ways and old, more soil conservation, a scientifically determined balance between conflicting forms of land-use and wateruse, better bodies and far better minds."

-Dr. Isaiah Bowman.

Dear Dr. Egloff:-

I wish to recommend ten members of my staff for membership in The American Institute of Chemists.

Among them are individuals with varying qualifications and therefore, their eligibility for the different type of membership varies accordingly.

I shall appreciate your sending me the necessary application blanks. I believe that everyone of these candidates is worthy of being included in the roster of the INSTITUTE.

Sincerely yours,

ELSA ORENT-KEILES,

Nutrition Chemist,

Division of Foods and Nutrition,

U. S. Department of Agriculture.

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Meeting Dates

- Jan. 30. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club, Philadelphia. Speaker: Dr. M. L. Crossley. Research Director, American Cyanamid Company, "Professional Status and Licensure."
- Feb. 27. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club, Philadelphia. Speaker: Dr. Gustav Egloff. President, A.I.C., "The Chemists' Role in a World at War."
- Mar. 15. Meeting. Baltimore Chapter. The American Institute of Chemists.
- Mar. 23. New York Chapter of The American Institute of Chemists 26th Floor. No. 2 Park Avenue, New York, N. Y. Speakers: Dr. Elmore H. Northey, Pharmaceutical Division, Calco Chemical Division of American Cyanamid Company, "The Therapeutic Imlications of the Sulfa Drugs"; Dr. Walter Modell, Cornell University Medical College, "Recent Developments in Antibiotics."
- Mar. 27. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club. Philadelphia. Speaker: Dr. Foster D. Snell, President, Foster D. Snell, Inc. "The Factors in Detergency."

- Apr. 18. Joint Meeting. Pennsylvania Chapter. The American Institute of Chemists, and Philadelphia Section, The American Chemical Society, Engineers' Club, Philadelphia. Speaker: Dr. H. G. Byers, F.A.I.C., "Soil Genesis and Some Soil Properties."
- Apr. 19. Meeting. Baltimore Chapter. The American Institute of Chemists.
- Apr. 27. New York Chapter of The American Institute of Chemists. Student Medal Presentation, 26th Floor, No. 2 Park Avenue, New York, N. Y. Speaker: Professor Alexander O. Gettler, Toxicologist of the City of New York, "Contributions Chemistry has Made in the Detection of Crime."
- May 17. Dinner and Business Meeting. Baltimore Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Northway Apartments, Baltimore, 6:30 p. m.
- May 21-23. Sixth Annual Conference of the Institute of Food Technologists. Hotel Seneca, Rochester, N. Y.
- May 25. New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. Annual Business Meeting, 26th Floor, No. 2 Park Avenue, New York, N. Y. Speaker: Dr. Wanda K. Farr, Celanese Corporation of America, "Utilization of Plant Cell Membranes."

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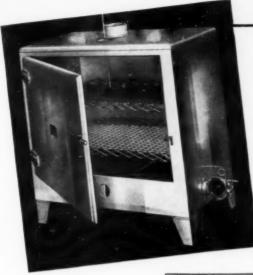
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Shelve	s include	Pe	d			9				2						3
Inside	width .									25'						29"
**	depth .							*		14"						19"
68	height .									19"						24"
Outside	width									28'						34"
8.6	depth									16"						20"
4.0	height									31"						37"
PRICE								s	8	0.0	0			51	1	30.00



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A LOW COST METHOD OF PROCESS COOLING

The Principle

By permitting water, aqueous solutions or any volatile liquid to evaporate under high vacuum and without heat from an outside source, enough BTU can be removed to chill the liquids down to 32°F, or even lower in the case of solutions.

Reasons for Low Cost

Because plain water takes the place of expensive refrigerants, evaporative cooling is much lower in cost than mechanical refrigeration. Even in some cases where conditions of industrial water supply are unfavorable this advantage prevails. Also since the equipment itself is simple and without moving parts it is economical to operate and maintain.

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